

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings, of claims in the application:

**Listing of Claims:**

Claims 1-18 (canceled)

Claim 19 (currently amended): A process for manufacturing an  $\text{Al}_2\text{O}_3$  membrane for a measuring cell which comprises the following steps:

- a. forming a membrane (2) from an  $\text{Al}_2\text{O}_3$  slurry;
- b. heating the membrane in a furnace a first time to sinter the membrane, with subsequent cool-down;
- c. heating the membrane a second time for smoothing the membrane, with subsequent cool down.

Claim 20 (currently amended): The process according to claim 19 ~~where~~ wherein a third heating step is performed following step c. for smoothing the membrane.

Claim 21 (currently amended): The process according to claim ~~20~~ 19 ~~where~~ wherein the sintering temperature of the first heating step b. is higher than the temperature of the ~~subsequent smoothing second heating step c.~~ or steps, preferably by no more than 100°C.

Claim 22 (currently amended): The process according to claim 19 ~~where~~ wherein during ~~the smoothing step c. or steps,~~ the membrane (2) is smoothed by pressing it between two flat plates, ~~particularly by loading the plates with weights.~~

Claim 23 (currently amended): The process according to claim 22 ~~where~~ wherein membrane (2) is detached from ~~between smoothing steps and~~ its original position between the two flat plates following step c., redeposited in onto the two flat plates in an offset position relative to the original position of the membrane upon the two flat plates during step c.

Claim 24 (canceled)

Claim 25 (currently amended): The process according to claim 19 ~~where~~ wherein the  $\text{Al}_2\text{O}_3$  membrane ~~shape is cast or pressed~~ is formed from ~~the an~~ an  $\text{Al}_2\text{O}_3$  slurry, ~~preferably from a~~

~~ribbon-shaped  $\text{Al}_2\text{O}_3$  green body supported on a carrier foil, and which is subsequently pulled off the foil.~~

Claim 26 (currently amended): The process according to claim ~~24~~ 32 ~~where the membrane shape is cast or pressed wherein the  $\text{Al}_2\text{O}_3$  membrane is formed from the an  $\text{Al}_2\text{O}_3$  slurry, preferably from a ribbon-shaped  $\text{Al}_2\text{O}_3$  green body supported on a carrier foil, and which is subsequently pulled off the foil.~~

Claims 27-30 (canceled)

Claim 31 (new): The process according to claim 21 wherein the temperature of the second heating step c. is no more than  $100^\circ\text{C}$  below the sintering temperature of heating step b.

Claim 32 (new): A process for manufacturing a capacitive vacuum measuring cell, comprising the following steps:

- a. manufacturing a first  $\text{Al}_2\text{O}_3$  housing plate (1) with outer and inner opposing surfaces and an outer periphery;
- b. forming an electrically conductive surface (7) on the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate to provide a first electrode of the capacitive vacuum measuring cell;
- c. manufacturing a second  $\text{Al}_2\text{O}_3$  housing plate (4) with an outer periphery;
- d. forming an opening in the second  $\text{Al}_2\text{O}_3$  housing plate (4) extending therethrough;
- e. sealing a connecting port (5) about the opening formed in the second  $\text{Al}_2\text{O}_3$  housing plate (4);
- f. manufacturing of an  $\text{Al}_2\text{O}_3$  membrane (2) having first and second opposing surfaces and an outer periphery;
- g. forming an electrically conductive film (7) on the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) to provide a second electrode of the capacitive vacuum measuring cell;
- h. disposing the  $\text{Al}_2\text{O}_3$  membrane (2) between the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1) and the second  $\text{Al}_2\text{O}_3$  housing plate (4), with the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) facing the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1), and spacing the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) at a predetermined distance from the

inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate (1) to define a reference vacuum chamber (25) therebetween, and spacing the second  $\text{Al}_2\text{O}_3$  housing plate (4) at a predetermined distance from the second surface of the  $\text{Al}_2\text{O}_3$  membrane (2) to define a measurement vacuum chamber (26) therebetween;

i. sealing the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane (2) to the outer peripheries of first  $\text{Al}_2\text{O}_3$  housing plate (1) and the second  $\text{Al}_2\text{O}_3$  housing plate (4) to form a vacuum tight seal therebetween.

Claim 33 (new): The process recited by claim 32 wherein the step of manufacturing the  $\text{Al}_2\text{O}_3$  membrane (2) includes the steps of:

- a. forming the  $\text{Al}_2\text{O}_3$  membrane (2) from an  $\text{Al}_2\text{O}_3$  slurry;
- b. heating the membrane in a furnace a first time to sinter the membrane, with subsequent cool-down;
- c. heating the membrane a second time for smoothing the membrane, with subsequent cool down.

Claim 34 (new): The process recited by claim 33 wherein the step of forming the  $\text{Al}_2\text{O}_3$  slurry includes the steps of forming a ribbon-shaped  $\text{Al}_2\text{O}_3$  green body upon a carrier foil, and subsequently pulling the ribbon-shaped  $\text{Al}_2\text{O}_3$  green body from the carrier foil.

Claim 35 (new): The process recited by claim 32 including the further steps of forming a first electrical, vacuum-tight feedthrough (6) through first  $\text{Al}_2\text{O}_3$  housing plate (1), and coupling said first electrical, vacuum-tight feedthrough (6) to the electrically conductive surface (7) formed on the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate to effect electrical coupling thereto.

Claim 36 (new): The process recited by claim 34 including the further steps of forming a second electrical, vacuum-tight feedthrough (6) through first  $\text{Al}_2\text{O}_3$  housing plate (1), and coupling said second electrical, vacuum-tight feedthrough (6) to the electrically conductive surface (7) formed on the first surface of the  $\text{Al}_2\text{O}_3$  membrane (2) to effect electrical coupling thereto.

Claim 37 (new): The process recited by claim 32 including the further steps of forming a getter opening (13/14) within the first  $\text{Al}_2\text{O}_3$  housing plate (1) communicating with reference

vacuum chamber (25), disposing a getter (10) within said getter opening (13/14), pumping down reference vacuum chamber (25) to evacuate matter therefrom, and activating the getter (10) to further lower the pressure within reference vacuum chamber (25).

Claim 38 (new): The process recited by claim 37 including the further steps of extending the getter opening (13/14) through first  $\text{Al}_2\text{O}_3$  housing plate (1), applying a vacuum to getter opening (13/14) to pump down the reference vacuum chamber (25), and subsequently applying heat to a cover (8) overlying getter opening (13/14) to form a vacuum-tight seal between the cover (8) and the first  $\text{Al}_2\text{O}_3$  housing plate (1) and simultaneously activating the getter (10).